

## Study of the effects of different irrigation regimes on morphological and functional traits of sunflower cultivars

### Authors:

Mohammad Amini<sup>1</sup>,  
Hossein Ajam Norozi<sup>1</sup>,  
Abolfazl Faraji<sup>2</sup> and  
Bahram Majd Nasiri<sup>3</sup>

### Institution:

1. Department of Agriculture, Gorgan University of Science and Research, Islamic Azad University, Gorgan, Iran.
2. Department of Agriculture and Natural Resources, Agricultural Research and Education Organization, Gorgan, Iran.
3. Department of Agriculture and Gardening, Agricultural and Natural Resources Research and Education Center, Isfahan, Iran.

**Corresponding author:**  
Hossein Ajam Norozi

### ABSTRACT:

Nowadays increase of population and need for food and limitation of water resources have caused that the worth of this vital liquid to be cleared up more than ever. In order to determine the water requirement of sunflower cultivars, an experiment was conducted in 2015-2016 in Iran. The experiment was carried out in factorial randomized complete block design with four replications levels. The treatments was contained irrigation regimes (D<sub>1</sub>: irrigation after 60 mm, D<sub>2</sub>: irrigation after 120 mm, D<sub>3</sub>: irrigation after 180 mm evaporation from evaporation pan, class A and sunflower cultivars) (H<sub>1</sub>: Azargol, H<sub>2</sub>: Progress, H<sub>3</sub>: Gabur, H<sub>4</sub>: Hysan 25 and H<sub>5</sub>: Hysan 36). Results showed that under non-stress and moderate stress conditions, Azargol and progress cultivars had the highest grain filling time, 1000 grain weight, stem diameter and head diameter. Under severe stress conditions, progress and Gabor cultivars excelled in some traits, so that Progress cultivar had the highest seed filling, 1000 grain weight, and stem diameter and Gabor cultivar had the highest number of budding, number of flowering and stem diameter. Results related to physiological traits showed that Azargol and Progress cultivars in terms of all studied traits (leaf area index, CGR, PGR, NAR and RWC) had a remarkable advantage over other cultivars. Under severe stress conditions, Azargol cultivar had the highest CGR, PGR, NAR and RWC. Considering that, the use of tolerant cultivars plays an important role in increasing the yield of sunflower. The present study suggested using Azargol cultivar for cultivation compared to other cultivars.

### Keywords:

Drought stress, Morphological features, Physiological features, Leaf area index.